IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Anthony Teillet, et al	Art Unit:	2821
Serial No.:	10/660,980	Examiner:	Dinh, Trinh Vo
Filed:	September 12, 2003	Docket:	100318.00111

For: **DUAL BAND, DUAL POLE, 90 DEGREE AZIMUTH BW, VARIABLE DOWNTILT ANTENNA**

TRANSMITTAL LETTER

June 16, 2005

Commissioner For Patents
Alexandria, VA 22313-1450

MAILING CERTIFICATE UNDER 37 C.F.R. 1.8(A)
I hereby certify that the above correspondence is being deposited with the U.S. Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450 on June 16, 2005.

Trish Paramore

Sir:

Responsive to the Office Action dated March 9, 2005, please amend the above identified application as follows:

In the Specification

Please make the following changes to the Specification:

(1) On Page 1, line 1 please replace with the following title:

DUAL BAND, DUAL POLE, 90 DEGREE AZIMUTH BW, VARIABLE DOWNTILT ANTENNA

(2) On Page 1, line 5 please replace with the following paragraph:

This application is a Continuation-in-Part of U. S. Patent application Serial No. 10/085,756 filed February 28, 2002 entitled "Antenna Array Having Sliding Dielectric Phase Shifters", now issued as U. S. Patent 6,621,465.

(3) On Page 1, line 11, please replace with the following paragraph:

The present invention is generally related to antennas, and more particularly, to mobile communication antennas including dual band, dual pole, variable downtilt antennas usable in PCS (1900 HZ) and cellular (800MHz) wireless communication networks.

(4) On Page 2, line 19, please replace with the following paragraph:

Moreover, multiple bands of service need to be provided to each cell, including, but not limited to PCS and cellular. Dual band dual pole antennas continue to require further technical capabilities, including being housed in a single antenna structure. To date, there is no known Dual band, dual pole variable downtilt antenna that has a 90 degree azimuth beamwidth. The present invention is such a device.

(5) On Page 3, line 2, please replace with the following paragraph:

The present invention achieves technical advantages as a dual band, dual pole, variable downtilt antenna having a microstrip feed network formed upon a PC board, and having horizontal dielectric elements slidable upon the microstrip feed network to achieve uniform phase shift and downtilt. Advantageously, the dielectric members are slidingly disposed upon serpentine portions of the microstrip feeding respective dipole elements to achieve uniform downtilt adjustment while using a microstrip architecture. Advantageously, this dual band, dual pole antenna achieves a complete 90 degree azimuth beamwidth which heretofore has never been provided in one device, especially with a device having variable downtilt.

(6) On Page 4, line 11, please replace with the following paragraph:

Figure 1 is a perspective view of the dual band, dual pole, 90 degree azimuth bandwidth, variable downtilt antenna according to the present invention;

(7) On Page 7, line 3, please replace with the following paragraph:

Referring now to Figure 1, there is generally shown at 10 a dual band, dual pole, 90

degree horizontal azimuth beamwidth, variable downtilt antenna according to the preferred embodiment of the present invention. Antenna 10 is seen to include a first linear array of dipole elements 12 forming a cellular band antenna, and two linear arrays of antenna elements 14, one linear array arranged each side of the first linear array 12 and together forming dipole elements forming a PCS band antenna. For purposes of clarity, the antenna elements 14 along the nearside of the antenna have been omitted in this Figure 1 to depict the various features of the antenna 10, including the microstrip feed system feeding each of the respective antenna arrays and formed upon respective PC boards having a backplane thereunder.

(8) On Page 10, line 3, please replace with the following paragraph:

One key advantage of the present invention is that the entire microstrip feed network to the dipole elements is fabricated upon the same PC board portions 18 with the PC board being the dielectric material between the ground plane 16 extending therebehind. This provides a complete dual band cellular/PCS antenna on a single PC Board, which is a space saving feature. In addition, the feed network is combined with the phase shifters on the single PC board. The present invention advantageously integrates the feed network on the PC board by arranging the microstrips in serpentine arrangements to obtain the needed microstrip length to maintain phase alignment of the antenna dipoles.

(9) On Page 11, line 23, please delete the following paragraph:

microstripmicrostripmicrostripmicrostripmicrostripmicrostrip

(10) On Page 15, line 7, please replace with the following paragraph:

With emphasis, and advantageously, the present invention provides a dual band, dual pole, variable downtilt antenna, and importantly, having a 90 degree azimuth beamwidth which prior to the present invention has never been provided in a single device. A 65° degree beamwidth is the best known to the inventors. Thus, one of the technical advantages of the present invention is a 90 degree azimuth beamwidth antenna that has been uniquely engineered and designed to provide all four features. This goal has not been obtainable to date due to all the

other RF requirements, RF limitations, and particular designs of past antennas.

(11) On page 23, line 4, please replace with the following paragraph:

A dual band, dual pole, variable downtilt, 90 degree azimuth beamwidth antenna (10). The antenna includes dipole elements (12, 14) forming both a PCS band and a cellular band antenna. The PCS band antenna has two sections disposed each side of the cellular band antenna, the elements of each being positioned 90° with respect to the other. A microstrip feed network formed upon a common PC board (18) feeds the respective dipole elements, and has serpentine portions with a corresponding dielectric member slideable thereover to establish the phase of the associated dipole antennas and achieve a linear downtilt of the respective antenna array. A slide rod adjustment assembly (100) provides unitary movement of the dielectric members between two different slide rods. These dielectric members are secured with adhesive to the respective slide rods to achieve good dielectric control and no use of hardware. The radiating dipole elements are capacitively coupled to each microstrip, and are also capacitively associated reflector element. One arm of the reflector element is offset at least 45 degrees with respect to the other arm to improve cross polarization.